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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte PAUL STEPHEN STACEY and
STEPHEN WILLIAMS

Appeal 2010-004201
Application 10/539,286
Technology Center

Before CHUNG K. PAK, CHARLES F. WARREN, and
TERRY J. OWENS, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL
STATEMENT OF THE CASE

The Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 8 and 13-21. Claims 1-7 and 12, which are all of the other pending claims, stand withdrawn from consideration by the Examiner. We have jurisdiction under 35 U.S.C. § 6(b).

The Invention

The Appellants claim a method for curing a composite material.
Claim 8 is illustrative:

8. A method for curing composite material including the steps of;
placing the material in a temperature controlled vessel and then,
curing the material and during the curing monitoring the taking
temperature readings and monitoring the temperature of at least part of the
material using an infra-red device remote from the material, and
processing the temperature readings and then adjusting the temperature
of the vessel to maintain a constant curing temperature.

The References

Schenck	4,463,437	Jul. 31, 1984
Charbonnet	5,209,881	May 11, 1993
Handel	5,345,397	Sep. 6, 1994
Whipple	6,132,084	Oct. 17, 2000

The Rejections

The claims stand rejected as follows: claims 8, 13, and 21 under
35 U.S.C. § 102(b) over Charbonnet,¹ claims 14 and 17 under
35 U.S.C. § 103 over Charbonnet in view of Whipple, claims 16, 18, and 19
under 35 U.S.C. § 103 over Charbonnet in view of Schenck, claims 8, 13-15,
17, 20, and 21 under 35 U.S.C. § 103 over Handel in view of Whipple, and
claims 16 and 18 under 35 U.S.C. § 103 over Handel in view of Whipple
and Schenck.

¹ The rejection under 35 U.S.C. § 102(b) over Charbonnet is withdrawn as to
claim 17 in the Examiner's Answer (Ans. 2).

OPINION

We reverse the rejections.

*Rejections over Charbonnet alone or
in view of Whipple or Schenck*

Issue

Have the Appellants indicated reversible error in the Examiner's determination that Charbonnet maintains a constant curing temperature?

Findings of Fact

Charbonnet wets or impregnates a continuous fiberglass web with resin, uses rollers to press the impregnated web between two plastic films, pulls the resulting continuous panel through an oven wherein it is shaped, such as by corrugation, and cured, peels the plastic films from the continuous panel, and then cuts the continuous panel into individual panels (col. 2, ll. 30-58; col. 4, ll. 1-5). The continuous panel is heated in the oven by any desired number of heaters (20) disposed both above and below the continuous panel (col. 3, ll. 1-7). The resin is a liquid at the commencement of heating in the oven, becomes a gel as an exothermic curing process begins and the panel attains a peak temperature, and then hardens with a slight drop from the peak temperature (col. 1, ll. 62-68; col. 3, ll. 34-39). Sensors, which preferably are infrared sensors (22-26), are disposed along the length of the oven to obtain a temperature profile of the continuous panel which provides an accurate indication of the gelation point (col. 4, ll. 19-23; col. 5, ll. 9-12). One of the sensors preferably is at the gelation point (col. 3, ll. 32-34). The output of the heaters (20) and/or the speed of a tractor unit (16) used to pull the continuous panel from the oven are adjusted to maintain the

gelation point at a specific location within the oven (col. 4, ll. 35-39; col. 4, l. 68 – col. 5, l. 6). Charbonnet discloses (col. 3, ll. 55-68):

If the location of the gelation point is ascertained, then the locations of the liquid precured section of the panel as well as the hardened cured section can be known and can be controlled. If shapers 11 are used, consistency in the profile or corrugated shape of the panel 11 is increased because it will be easier to maintain the pre-cured Pliable [sic] section of the panel with respect to the shapers, which may be located throughout and in curing zone 30 as well as in a portion of curing zone 32. Knowing that the gelation point is in the middle of the oven, for example, should make it easier to ensure that the panel 11 is sufficiently hardened by the time it leaves the oven so that its shape or surface is not deformed or destroyed by the tractor unit 16.

Analysis

The Appellants argue that Charbonnet does not maintain a constant curing temperature (Br. 8-9; Reply Br. 5).

The Examiner argues that “Charbonnet teaches that it is desirable to keep the gelation point in a specific spot within the oven (col 3 ln 54-56, given this it would follow that the gelation point is a specific temperature which means that Charbonnet is controlling the oven to have a constant cure temperature.)” (Ans. 4).

The Examiner has not provided evidence that Charbonnet’s gelation point is controlled at a specific temperature. Charbonnet teaches that the gelation point is a peak temperature (col. 3, ll. 37-38), but does not appear to indicate that the peak temperature cannot fluctuate, provided that it remains at the same location in the oven. The Examiner apparently is arguing that by controlling the location of the gelation point within the oven, Charbonnet

inherently is controlling the temperature to be constant at that point. An inherent characteristic, however, must be inevitable, and not merely a possibility or probability. *See In re Oelrich*, 666 F.2d 578, 581 (CCPA 1981). The Examiner has not provided evidence that Charbonnet's control of the location of the gelation point in the oven inevitably controls the temperature at that point to be constant.

The Examiner argues that "Charbonnet teaches changing the oven temperature to maintain the first curing stage at a desired point in the oven which is caused by having a specific temperature at a desired point in the oven" (Ans. 12-13).

Charbonnet discloses that "[a]t a first stage 30 of curing, the resin is a liquid" (col. 3, ll. 34-35). The Examiner has not provided evidence that the liquid resin is maintained at a specific temperature.

Conclusion

The Appellants have indicated reversible error in the Examiner's determination that Charbonnet maintains a constant curing temperature.²

Rejections over Handel in view of Whipple alone or with Schenck

Issue

Have the Appellants indicated reversible error in the Examiner's determination that one of ordinary skill in the art would have combined Handel and Whipple?

² The Examiner does not rely upon Whipple or Schenck for any disclosure that remedies the above-discussed deficiency in Charbonnet (Ans. 5-8).

Findings of Fact

Handel cures a fiber-reinforced composite part in an autoclave (abstract). Thermocouples measure temperatures of the part at various points within the autoclave (col. 5, ll. 34-36). “Typically thermocouples are located in the part midway through its thickness or depth, on the centerline of a long dimension and about one inch from an outer edge” (col. 5, ll. 39-42). The temperature profile within the autoclave is used to determine the autoclave temperature setting which provides optimal curing (col. 6, ll. 17-21).

Whipple discloses a non-contact temperature measurement device which measures the temperature of an object in the chamber (42) of a household appliance such as a microwave oven by impinging a scan pattern of radiation on all areas of the chamber (42) and using a processor to generate, from detected infrared radiation from the chamber, a calibrated temperature signal for the object (abstract; col. 1, ll. 6-11; col. 2, ll. 50-59; col. 5, ll. 43-50). The infrared radiation’s source (7) and detector (8) are separated from the chamber (42) to leave more space free in the chamber (42), keep components away from radiation, dirt contamination and the like in the chamber, reduce the number of required components, increase robustness and reliability, and reduce complexity and cost (col. 6, ll. 25-35; Fig. 1).

Analysis

The Appellants argue that one of ordinary skill in the art would not have combined Handel and Whipple (Br. 14-15).

The Examiner argues that it would have been obvious to one of ordinary skill in the art to use Whipple’s scanned infrared radiation system

to measure Handel's autoclave temperature because Whipple's system "provides improved responsive non-contact measurement (col 2 ln 50-60) while scanning across all areas of the chamber (col 5 ln 46-50)" (Ans. 9) and "prevents damage to the article from insertion of the thermocouples and still provides a monitoring of the entire article's surface temperature" (Ans. 15).

Establishing a prima facie case of obviousness of an invention comprising a combination of known elements requires "an apparent reason to combine the known elements in the fashion claimed." *KSR Int'l. Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

The Examiner has provided reasons why one of ordinary skill in the art would have substituted, for Handel's thermocouples used to measure temperatures of a fiber-reinforced composite being cured in an autoclave, Whipple's technique for using scanned infrared radiation to determine the temperature of an object inside a household appliance such as a microwave oven, but the Examiner has not established that those reasons would have been apparent to one of ordinary skill in the art from those references. Thus, it appears that the Examiner combined the references based upon impermissible hindsight from the Appellants' disclosure. *See In re Warner*, 379 F.2d 1011, 1017 (CCPA 1967) ("A rejection based on section 103 clearly must rest on a factual basis, and these facts must be interpreted without hindsight reconstruction of the invention from the prior art").

Also, the Examiner has not established that one of ordinary skill in the art would have had a reasonable expectation of success in using Whipple's technique, which produces an infrared radiation scan pattern for generating a calibrated temperature signal (col. 6, ll. 1-7), to obtain the temperature measurements desired by Handel which, Handel discloses, are taken at

distributed locations on the part, typically using thermocouples positioned midway through the part's thickness or depth (col. 5, ll. 34-42). *See In re O'Farrell*, 853 F.2d 894, 903-04 (Fed. Cir. 1988) ("Obviousness does not require absolute predictability of success For obviousness under § 103, all that is required is a reasonable expectation of success").

Conclusion

The Appellants have indicated reversible error in the Examiner's determination that one of ordinary skill in the art would have combined Handel and Whipple.³

DECISION/ORDER

The rejections of claims 8, 13, and 21 under 35 U.S.C. § 102(b) over Charbonnet, claims 14 and 17 under 35 U.S.C. § 103 over Charbonnet in view of Whipple, claims 16, 18, and 19 under 35 U.S.C. § 103 over Charbonnet in view of Schenck, claims 8, 13-15, 17, 20, and 21 under 35 U.S.C. § 103 over Handel in view of Whipple, and claims 16 and 18 under 35 U.S.C. § 103 over Handel in view of Whipple and Schenck are reversed.

It is ordered that the Examiner's decision is reversed.

REVERSED

sld

³ The Examiner does not rely upon Schenck for any disclosure that remedies the above-discussed deficiency in Handel and Whipple (Ans. 10-11).

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Application 10/539,286

NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON VA 22203